

JAXA SOLAR-C Mission

SOLAR-C Working Group, JAPAN

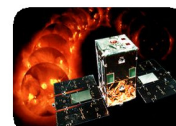
The Japanese solar physics community is proposing the next solar observing satellite mission, SOLAR-C, following *Hinode* (SOLAR-B). Two candidates are under study: PLAN-A and PLAN-B. One is going to be proposed to JAXA for a launch in 2015 after a fundamental study.

PLAN-A: Magnetic and helioseismic observations of the solar polar regions to diagnose the solar internal structure and dynamo mechanism from a high-inclination orbit.

PLAN-B: Further pursuing small-scale elementary dynamics from the photosphere to corona with enhanced spectroscopic capability



Hinode
2006-

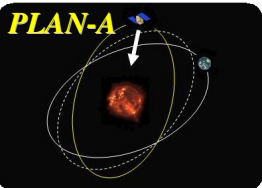


Yohkoh
1991-2001



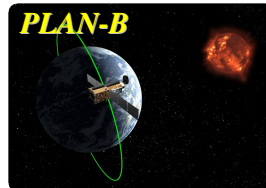
Hinotori
1981-1982

Mission Description



- Magnetic and helioseismic observations to diagnose the internal structure and dynamo mechanism
- Explorer the solar polar regions by out-of-ecliptic observations
- Launched by JAXA H-IIA rocket
- Maintain 1AU distance

Mission Description



- Further pursuing small-scale elementary dynamics from the photosphere to corona with enhanced spectroscopic capability
- Observations with higher-spatial resolution for transition region and corona than that in *Hinode*
- Spacecraft launched by JAXA H-IIA to Sun-synchronous polar orbit or gyrosynchronous orbit

Science Objectives:

- Understand the internal structure of the Sun and the solar dynamo mechanism
- Understand the mechanism for high-speed solar wind
- Understand the variability of environments (space weather) in inner heliosphere with distance from the plane of the ecliptic

Science Objectives:

- Understand the solar chromospheric and coronal heating mechanisms by enhanced spectroscopic diagnostic capability
- Understand the plasma dynamics throughout the outer solar atmosphere by high-throughput instruments
- Understand the acceleration mechanism for fast and slow solar winds

10,000 km

Mission Instruments

- Optical telescope with full-disk FOV to obtain magnetogram and Dopplergram
- EUV (or X-ray) telescope for detecting coronal dynamics
- EUV imaging spectrometer for identifying/investigating the source of the fast solar wind
- Auxiliary for in-situ measurements, solar irradiance monitoring, and CME observations

Key Technology

- Need an efficient kick-motor going to interplanetary space
- High-thrust and long-life ion engine
JAXA has heritage of ion engine and Electric Delta-V Earth Gravity Assist (EDVEGA) in *Hayabusa* mission
- High-level power system for high-thrust ion engines
- High-data rate interplanetary telemetry

Mission Instruments

- Visible-UV telescope with enhanced spectroscopic capability for chromosphere
- EUV (or X-ray) telescope with the highest-spatial resolution ever achieved
- EUV imaging spectrometer with largely enhanced throughput
- More emphasis on spectroscopic observations
- Enhanced throughput in EUV instruments to track the dynamical processes

Key Technology

- Diffraction limited telescope; heritage from *Hinode*
- Image stabilization technique for all telescopes and spacecraft; heritage from *Hinode*
- Stringent contamination control
- High-data rate telemetry for continuous high-cadence observations